

MORE THAN JUST FUEL SAVINGS...

[ENERGY EFFICIENCY + INNOVATION = MORE FLIGHT HOURS]



OPERATIONAL ENERGY INNOVATION

FLY FAST, SAVE GAS?

Two F-22 CORONET demonstrations showed flying at a faster airspeed, including during air refueling, not only reduces transit time, but also saves fuel.

In January 2014, Maj Sterling Boyer and Mr. Don Reese, working with TACC and the AOS, developed the concept of flying and air refueling F-22 CORONETs at 335 KIAS, closer to F-22 maximum range airspeed and within boom limits, instead of the standard 310 KIAS. The first demonstration flew 12 F-22s with KC-10 and KC-135 tanker support from Langley to Hickam, then on to Kadena, measuring a range of factors including fuel use, flight hours, and aircraft stability. Results indicated significant savings not only in flight time, but also net fuel, which could have a large impact if the method is applied across the fleet.



"I think that's awesome on many counts...Saves gas, saves time, empowers innovation."

– Gen Mike Holmes,
ACC Commander

A second demonstration was requested by ACC and AMC to validate these findings. In August 2017, a CORONET, consisting of six F-22s and two KC-10s, divided into two cells and flew from Elmendorf to Hickam at different speeds; one cell at 335 KIAS and the other at 310 KIAS. Under the same conditions, the side-by-side comparison showed that the faster cell saved nearly 9.5K lbs of fuel (approximately \$3K) and 1.5 hours of flight time (about \$40K). What's more, the F-22 pilots reported greater stability while air refueling at the higher speed and the KC-10 crew reported no degradations to maneuverability or air

FAST FACTS

- Overall: 10% decrease in flight time, 6% decrease in fuel used
- F-22: Greater AR stability

refueling effectiveness. The next steps are to conduct analysis on other CAF platforms to determine their optimum air refueling speeds and incorporate the optimized speeds into planning standards.

WHY IT MATTERS – Optimizing operational energy matters. The 10% flight time decrease and 6% fuel savings highlighted in these proof-of-principle missions means more hours for flight training/combat and less wear and tear on the aircraft. Applying this concept to approximately 130 annual F-22 movements and other CAF platforms could reallocate 800+ hours of flight time annually back to the squadrons. Identifying these operational energy efficiencies is how we improve readiness and increase combat capability.



"We must unleash the military from the tether of fuel" – James Mattis, Secretary of Defense

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MORE THAN JUST FUEL SAVINGS...

[ENERGY AWARENESS + BEST PRACTICES = SMART FLYING]



DO YOUR PART, FLY SMART - Your smart use of operational energy enables greater combat capability, more training, and lower sustainment costs across the Air Force. [What can you do?](#)



Optimize your mission profiles to allow maximum time over target or in the range.



Train close to home when able—Utilize the closest range that will support your training.



Train Joint—When possible, train with sister Services to maximize joint training and interoperability.



Use minimal weight/drag configurations consistent with mission requirements.



Plan, coordinate and execute air refueling requirements to minimize excess fuel carried by the tanker.

The Office of the Deputy Assistant Secretary for Operational Energy (SAF/IEN) was created to develop and champion energy-informed solutions for the Air Force. We seek to influence aircraft operation and design through new technologies, policies, and procedures. Your support helps create an energy-optimized Air Force that maximizes warfighter combat capability.

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